



**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of: Zizzamia et al.

Serial No.: 10/054,702

Filing Date: October 23, 2001

For: **COMMERCIAL INSURANCE SCORING SYSTEM AND METHOD**

Examiner: Thomas, Joseph

Group Art Unit: 3626

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**DECLARATION OF FRANK M. ZIZZAMIA DETAILING SECONDARY  
CONSIDERATIONS OF NONOBVIOUSNESS OF THE CLAIMED INVENTION**

I, FRANK M. ZIZZAMIA, under penalty of perjury, hereby affirm and say:

1. I am an inventor of the commercial insurance scoring method described and claimed in the above-identified patent application.
2. I am a Director with Deloitte, LLP, and am the founder, and one of the leaders, of Deloitte's Advanced Quantitative Services Practice ("AQS"), based in Hartford, Connecticut.

Deloitte, LLP is the assignee of the above-identified patent application. My business address is Deloitte Consulting LLP, City Place I, 32<sup>nd</sup> Floor, 185 Asylum Street, Hartford, CT. 06103-3402. Our AQS has developed various insurance policy scoring models, which we maintain. These models are commercialized versions of the commercial insurance scoring method described and claimed in the above-identified patent application. These models are commonly known in the industry as “commercial insurance underwriting predictive models.” As such, these models take as inputs values for multiple variables, on the order of 50-100, and output a score for the risk being proposed to be underwritten. The score is used to appropriately price the business. Our AQS practice licenses these models to our clients.

3. In the Final Office Action that issued on September 6, 2007 in the above-identified patent application, all of the pending claims were rejected under 35 U.S.C. § 103, as being unpatentable over U.S. Patent No. 5,970,464 to Apte et al. (“Apte”) in view of U.S. Patent No. 4,975,840 to DeTore et al. (“DeTore”), and further in view of U.S. Patent No. 5,893,072 to Zizzamia (“Zizzamia”). I submit this declaration to refute that rejection by detailing numerous facts which demonstrate that the claimed invention is non-obvious. These facts are submitted as objective evidence of non-obviousness under MPEP § 716.01(a). In what follows, I detail how the sophisticated insurance underwriting marketplace has time and again found value in the claimed methods, has been unable to develop these methods independently, has been skeptical that the claimed methods would work, and has paid, and continues to pay, license fees to Deloitte so as to be able to use predictive models created pursuant to the claimed methods and their results to obtain greater profitability in the insurance business.

**Customer No. 31013  
Docket No. 098056/00135**

**PATENT**

**Unexpected Results**

4. Two primary types of unexpected results have been achieved in connection with the claimed invention. First, models built according to the claimed invention work. Models implementing the claimed invention have been successfully developed for dozens of Deloitte Consulting LLP (“Deloitte”) commercial insurance clients. These clients, comprising large national insurance companies, regional insurance companies, small start-up web-based insurance specialty companies, state insurance funds and others, have all licensed models according to the claimed invention and are using them in their daily workflow and work processes.

5. Second, in the course of developing the claimed invention, new relationships have been discovered involving external variables that can be predictive of a commercial insurance policy’s subsequent profitability. These relationships were heretofore unknown and were uncovered during the development of the claimed invention. Such new relationships include for example, the ratio of a business’ slow payments to total payments, the number of years since the business has physically moved locations, etc.

**Commercial Success**

6. Deloitte has achieved highly significant commercial success licensing various commercial embodiments of the claimed invention. During the last seven years, Deloitte has realized well over \$50,000,000 in professional consulting fees directly related to embodiments of the claimed invention. In fact, approximately 90% of the commercial insurance policies in effect today that are scored, are scored using an embodiment of the claimed invention. The number of

people Deloitte employees as involved in services directed to the claimed invention has grown from an initial group of 10 to over 70 today<sup>1</sup>.

### **Long-felt Need**

7. For many years insurance companies have sought out improvements in their ability to prospectively estimate the profitability of commercial insurance products without success. Products offered in the commercial lending marketplace, such as, for example, the D&B commercial credit score, were evaluated for effectiveness as predictors in the commercial insurance arena, but were shown to be of limited value. The widespread adoption of the claimed invention by the commercial insurance industry clearly demonstrates a long-felt need for the invention. Approximately 50% of small commercial insurance products are currently using the claimed invention today with more coming online.

### **Failure Of Others**

8. The failure of three significant others is well known. The first is the primary insurance industry rate setting organization. This company developed their own version of the invention a few years ago only to see no adoption by insurance companies. Their success, as measured by sold products, is essentially zero.

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<sup>1</sup> The entire staff of Deloitte's AQS practice is involved in developing, maintaining and licensing predictive models according to the claimed invention.

9. The second is a well known insurance statistical modeling company. This company has tried to replicate both the claimed invention as well as its market success. In numerous instances insurance companies have initiated projects with this company only to subsequently become dismayed and engage Deloitte to employ the claimed invention. The complaints of such insurance companies have consistently been that the other company did not understand how to develop a viable equivalent of the claimed invention.

10. The third is a software company that claims to have developed its own version of the claimed invention and in fact often claims in its sales pitches that their version is superior to Deloitte's scoring models. This company has had numerous commercial contracts, all of which have publicly failed. In fact, Deloitte has picked up at least four of this software company's former clients, all of which complained to Deloitte that the company did not at all understand the problem, the solution, or how to implement it.

11. Corroborating the failure of others to develop equivalent technology, another large consulting company, also a competitor of Deloitte, has often commented that "we don't know how Deloitte does it, but they own this space".

#### **Copying by Others**

12. Numerous clients of Deloitte, after having successfully completed engagements of the inventive models, and having received an effective knowledge transfer from Deloitte, have gone on to hire staff, buy software and hardware, and construct their own basic versions of the claimed invention.

### **Licensing**

13. As noted, Deloitte has licensed the invention to several clients who pay Deloitte annual licensing fees for the right to continue their use of the claimed systems and methods.

### **Skepticism of Experts**

14. During the first few years in which Deloitte offered various embodiments of the claimed invention to the public, it was commonplace for commercial insurance underwriting experts to be not only skeptical but downright obstructionist to the idea of using the claimed invention to score their product. As the claimed invention has gained such significant marketplace success, this skepticism has given way to a belief by underwriting experts that they must have the invention in order to maintain a competitive edge relative to their competitors.

### **Example I - Major Northeastern U.S. Insurer's Business Owners Package Project**

15. A paradigmatic example of the success of the claimed invention is that of a prominent Northeastern United States mutual insurance company (to be termed "MIC" for convenience). MIC is a multi-line property and casualty insurer with a commercial book of business in Business Owners Package (BOP), Commercial Automobile (CA), and Workers' Compensation (WC) insurance.

16. In late 2002 Deloitte began initial discussions with MIC regarding providing it with a commercial insurance predictive model, of the type described in the above-identified patent application. This model would assign a score to each and every policy marketed to a proposed insured. Such a score is based on collecting various data, and once such data is procured, extracting a multivariate predictive statistical model from the data. The score can be a mathematical formula having a y-intercept and a series of terms comprising co-efficients and variables, as described in the present application at ¶¶ [0086] and [0087].

17. At the time of these discussions, MIC was employing standard underwriting processes to underwrite their commercial insurance book of business. Such standard processes included, for example, the automation of *underwriting rules* and the use of external data (such as, for example, D&B scores), as are described in Apte and DeTore. To the best of my knowledge, at the time MIC was employing standard and conventional business rule logic to the business problem of commercial insurance underwriting. Both Apte and DeTore are rule based approaches, with DeTore being a more human expert based rule determination, and Apte being a more data driven rule determination. It is my understanding that these are very commonly employed methods for determining business rules and are in widespread use in the insurance industry. Of course, they do not work particularly well, especially when compared with the claimed invention. It is my understanding that MIC had developed a set of business rules that were used to govern their business decisions, the same business decisions that are included in Deloitte's benefit calculation, e.g., which policies to nonrenew. A typical business rule would be, for example, if the policy had a three year loss ratio over 55% then such policies would be flagged for consideration by an underwriter for nonrenewal.

18. Numerous examples of business rules are provided in Apte. In fact, Apte's technique is specifically one where "Data mining techniques are applied to historical policy and claims to extract rules that describe policy holders with homogeneous claim frequency and severity characteristics. These rule sets are used to classify policy holders into distinct risk groups, each with its own set of characteristics, including pure premium." Apte at Abstract. Thus, in contrast to the claimed invention a "model" in Apte is nothing more than a "rule set." As Apte states clearly:

When the Viewer tab is selected, the viewer screen shown in FIG. 8 is displayed. This screen allows a user to see in further detail particulars about a model or an edited rule set that has been selected from the existing models screen. In addition to identifying the database name on which the model was trained or evaluated, this screen also displays the accuracy estimate of the model in terms of several statistics. Also, the rules that comprise this model will be available for inspection in this screen. One individual rule will be displayed at a time, but a scroll facility allows the entire rule set to be scrolled through for a rule.

Apte at 6:45-56. All Apte has are rules. Fig. 8 shows in detail "Rule 4." Rules, such as Rule 4 of Fig. 8 of Apte, are not a score that is a weighted multivariate expression.

19. In contrast, the method of the claimed invention relies on a score obtained from a predictive model. For example, if the score is > 90 then the policy can be flagged for consideration by an underwriter for nonrenewal. The score is a function of the multiple variables used as predictive, including any created variables as described in ¶ [0024] of the present specification. The score can be expressed as an offset plus a series of weighted variables, as illustrated in ¶ [0086] of the present specification. This is a fundamentally different approach, and results in different policies being nonrenewed, as compared to the prior art rule-based systems. This is because a model according to the claimed invention does not merely "fire" or

apply a rule involving one (or even a few) variables, such as loss ratio, but rather its outputted score is a function of all variables used in the model. Thus, it is possible for policies to score > 90 but not have a prior 3 year loss ratio > 55%. Hence the dramatic improvement in business results from using the model output. It does a better job at identifying both overpriced and underpriced policies as compared to traditional methods, including those described in Apte or DeTore.

20. MIC was not satisfied with the underwriting results obtained using these standard techniques, and was thus searching for a better way to underwrite policies. MIC was not satisfied in part because they were aware of Deloitte's claim that using the claimed invention we could prospectively identify significantly underpriced and overpriced risks in their book of business. To the traditional underwriter this constituted a direct challenge to the effectiveness of what they were doing and how they were doing it. As was reflected in its annual loss ratio numbers, MIC was in fact underperforming as compared to the industry from a Loss + LAE ratio perspective, which is somewhat of an ultimate measure of how an insurance company is doing. To some extent, Deloitte highlighted these facts to MIC as part of our sales pitch. We further claimed that using the claimed invention we would identify the segments of overpriced and underpriced policies, and that if MIC modified their business processes as outlined in our benefit calculation they would subsequently realize improvements in their results. On a high level, as measured by their Loss + LAE ratio, they did, in fact, improve and began to perform better than the overall industry average. This information was shared with MIC in late 2002 and throughout the first half of 2003 as we built a model for them, completed the validation, and gave MIC

general advice on how to use the model output in production business processes as envisioned in the benefit calculation.

21. The problem with a rules based underwriting approach, even when coupled with external data, is that such an approach is not as statistically advanced as the methods of the claimed invention. Because we are working in multidimensions, using at least 50 variables simultaneously, there are millions, if not billions, of potential combinations of values. A rules-based approach would thus need that many rules to completely map the input space of variables to an output value. In contrast, the claimed invention uses multivariate statistics, including multidimensional curve fitting techniques. The curve fits through each dimension whereas the rules are functionally piecemeal segments of the statistical curve, thus requiring a nearly infinite number of rules to approximate such a multi-dimensional curve. Thus, the actual underwriting results that MIC was achieving were underperforming their competitors. In fact, the following comparison of MIC's Loss and LAE ratios (bottom row) with those of the commercial insurance industry in aggregate (middle row) show that in 2003, when Deloitte began the project, MIC was underperforming the industry as a whole, and that for the years 2004-2006 MIC outperformed the industry as a whole:

**Loss & LAE Ratio (%)**

<b>YEAR:</b>	<b>2006</b>	<b>2005</b>	<b>2004</b>	<b>2003</b>
<b>INDUSTRY:</b>	57.7%	82.1%	71.3%	72.3%
<b>MIC:</b>	<b>57.2%</b>	<b>72.5%</b>	<b>67.3%</b>	<b>85.7%</b>

22. In response to these complaints regarding the underwriting techniques MIC was using in 2002 and in prior years, Deloitte (specifically Rebecca Amororo, Jim Marino, John Lucker, and Frank Zizzamia) offered, in the fourth quarter of 2002, that using a multivariate statistical model extracted from a set of collected data, Deloitte could produce a superior toolset as compared to MIC's then current underwriting methods. We further offered that the improvement could be directly measured on a head-to-head basis, as more thoroughly described below.

23. Initially, MIC was very skeptical of our claims regarding the power of our scoring methods. MIC's then head of underwriting viewed the claims made by Deloitte through a traditional underwriting point of view. He could not understand how a statistical system could be better at underwriting than human underwriters. His opinion was expressed several times to Deloitte personnel in late 2002 both in face-to-face meetings as well as in teleconferences. Because of this skepticism, MIC refused to commit to a full project without seeing the actual results of an actual model, and made it clear that then and only then, would they commit to continuing with the remainder of the project. Deloitte agreed to structure the engagement into two parts. The first part would involve model development and demonstration of it's effectiveness on an independent historical holdout sample. MIC would then review the holdout sample validation results and decide if they wanted to proceed with the second part of the project, involving scoring of an entire MIC book of business.

24. MIC decided to engage Deloitte for one initial model for their BOP (business owners package) book of business. Nonetheless, as noted, MIC remained skeptical of Deloitte's ability to develop commercial insurance models as described in the present application. In fact, MIC's then Chief Underwriting Officer was so skeptical that he insisted that the majority of Deloitte's

fee be put at risk – only payable on actual proof of the model results. As described above, Deloitte agreed to develop the model through the historical holdout sample independent validation for \$100,000, whereas the entire engagement was priced at \$450,000. If the model demonstrated effectiveness at segmenting profitable from unprofitable risks on the independent holdout validation historical dataset, then the model would be deemed to be working and successful. Deloitte provided the independent holdout validation historical dataset results to MIC without any predetermined threshold of segmentation that would define success. It was MIC's actuarial department that evaluated such model results. In their opinion the model was in fact working on the historical dataset used for the independent holdout sample validation.

25. Because Deloitte was so confident in its ability to deliver proof of its results it consented to \$350,000 of its total project fee being put at risk. Specifically, MIC agreed to pay Deloitte \$100,000 to develop the model and then based on successful actual model results MIC would pay the contingent \$350,000.

26. Additionally, Deloitte also developed a benefit calculation of the estimated benefit to MIC from use of the claimed methods. The benefit calculation was based on specific revisions to MIC's work processes using the output of the invention. For example, MIC's current methods were not optimizing the correct policies for nonrenewal during the prerenewal cycle. By using the model output, or score, of the claimed invention to correctly identify the most prospectively unprofitable policies, MIC was able to optimize their nonrenewal or cancellation business process. MIC took that benefit calculation and revised the assumptions to develop their own estimate of the benefits of the project. The final calculation was completed, and included the following business processes that would be governed and driven by the inventive output as

opposed to MIC's then current methods: new business accept/decline, new business pricing, renewal cancellations (nonrenewals), and renewal repricing. They projected a three year benefit of \$16.3M to MIC for their BOP, Commercial Auto, and Workers' Compensation books of business based on their own commitments to specific levels of business actions in the aforementioned four business processes, *e.g.*, to cancel or nonrenew at least 2% of the policies, but focused on a specific model invention score range, *i.e.*, in the 91- 100 range with the maximum score being 100. The following is the redacted text of a Business Wire report from January 2008 regarding MIC's AM Best rating. The report directly cites "Predictive Modeling", *i.e.*, the claimed invention that Deloitte provided MIC with beginning in 2003, as one of the key reasons for the improved rating of MIC's financial performance:

A.M. Best Co. has revised the outlook to positive from stable on all ratings of [MIC] and its subsidiaries, including the publicly-traded holding company, [MIC]. Best also affirmed the financial strength rating (FSR) of 'A-' (Excellent) and issuer credit ratings (ICR) of "a-" of [MIC] and its property/casualty pooling members, along with the FSR of 'B++' (Good) and ICR of "bbb+" of [MIC] Life Insurance Company. In addition, Best affirmed the ICR of "bbb-" and the debt rating of "bbb-" on the existing senior notes of [MIC] and the indicative ratings of "bbb-" on senior debt, "bb+" on subordinated debt, "bb" on trust preferred securities and "bb" on preferred stock that are filed as part of the universal shelf registration of [MIC]. The ratings reflect [MIC's] excellent risk-adjusted capitalization, improved operating performance, solid regional market franchise, as well as the future benefits to be derived from management's material corrective actions over the past several years. The affirmation of the ratings acknowledges that benefits are being derived from [MIC's] proactive re-underwriting and pricing initiatives, loss reserve development stability, cultural changes in claim management and field operations, **and investments in predictive modeling and policy management systems technology to support underwriting effectiveness and make it easier for agents to do business with [MIC].** The positive outlook on the ratings of the group recognizes these initiatives.

(emphasis added) (actual company name replaced with "MIC")

27. Deloitte's MIC BOP project commenced in January, 2003. Six months later, by June of 2003, Deloitte completed the model and delivered the model results to MIC's chief underwriter. The model results were based on a set of historical policies with actual premium and loss results that were not included in the development of the model, *i.e.*, the historical independent holdout validation sample. The model was used to score each policy in the historical independent holdout validation sample. Since the actual premiums and losses were known for such historical policies, the effectiveness of the model's scores could be evaluated with relation to the actual historical loss results. If the model worked as expected then low scored policies would have low historical losses and vice versa. The chief underwriter had his actuarial department review and attest to the accuracy and reliability of the model results. More specifically the actuarial department analyzed the model results on the historical validation dataset, *i.e.*, on historical data where the actual premiums and losses were known. They evaluated how effectively the invention was able to prospectively estimate or segment resultant profitability. As described in the invention, the score ranges are grouped into ranges from low to high. The actual profitability of the low score ranges was much greater than the actual profitability of the high score ranges. This proved that the model was working. The MIC actuaries also decomposed the model results to better understand what individual risk characteristics were driving the invention's success. In their professional opinion they concluded that the model was working effectively. This was accomplished, the model results were accepted and the contingent \$350,000 portion of Deloitte's fee was paid in September, 2003. Thereupon, MIC immediately proceeded to engage Deloitte to construct models for their WC and CA books of business as well. They put the WC and CA models into full production use.

28. The results of applying the claimed methods on the MIC BOP book of business were compared to the then current MIC state of the art processes. Using the claimed methods Deloitte was able to segment the MIC BOP book of business into future profitability segments ranging from policies that would be 31% more profitable than average to policies that would be 72% less profitable than average. It was estimated jointly by both Deloitte and MIC personnel that MIC 's prior methods were identifying policies for nonrenewal cancellation with a future profitability of 15% less than average, as opposed to the 72% less profitable than average identified by the claimed methods. Since the MIC historical policy files included a code that specified when a policy was being nonrenewed, *i.e.*, cancelled, for underwriting reasons, it was a direct measurement to determine what was the average model score for all such historical nonrenewals. The average score of the historical nonrenewed policies corresponded to a future unprofitability of 15%. This was known because the average score of the historically nonrenewed policies was between 71 – 80. Such a score range was demonstrated on the historical independent holdout validation sample to subsequently produce a level of profitability that was 15% worse than average. Conversely, by using the model score range of 91-100 to identify policies for nonrenewal such policies were demonstrated by the model results on the historical independent holdout validation sample to have a future level of profitability that was 72% worse than average. Hence the business value of using the model for nonrenewals. These results convinced MIC to proceed not only with the remainder of the BOP project but also with the CA and WC projects as well.

29. Deloitte successfully completed the BOP project as well as the CA and WC projects. Deloitte delivered to MIC a multivariate formula that optimally weights risk characteristics that

are related to future policy profitability, *i.e.*, underwriting quality. The multivariate formula was thoroughly documented by Deloitte for MIC in a written manual with an accompanying statistical file of actual model results.

30. Although MIC had and still has a large internal actuarial department , populated by individuals skilled in mathematics, statistics, insurance theory, and large scale programming, MIC was unable to independently develop the claimed methods in-house. Thus MIC did not, and still does not, possess the techniques described in the present invention and captured in the claimed methods that were necessary to create the models. It is for this reason that they were forced to license this technology from Deloitte.

31. Accordingly, MIC has continued to license all three of these models from Deloitte on an annual basis for a significant annual license fee in the hundreds of thousands of dollars range. Moreover, we have every indication that MIC will continue to do so for the foreseeable future. MIC has re-licensed the BOP model in September, 2007 and has communicated that they wish to re-license the CA and WC models on or about March of 2008 with a 10% annual fee increase.

32. MIC did explore other alternatives to Deloitte's invention. Specifically MIC participated in a project with an insurance industry organization (termed "IIO" herein for convenience). IIO's actuarial department attempted to construct a similar model to Deloitte's inventory and BOP model. However, in MIC's opinion the IIO model was inferior to Deloitte's invention and did not proceed any further with ISO. IIO's BOP model has not gained any traction in the marketplace. It does not employ a significant number of variables, either internal or external. And it requires individual clients to generate complicated data interfaces to use the model. After

evaluating the IIO model MIC decided not to pursue it any further but rather to continue with Deloitte's invention.

33. MIC also explored an offer from an insurance software company (termed "ISC" for convenience) to develop a BOP model using that company's proprietary modeling algorithms. The offer from ISC to MIC was at a fraction of the cost of the professional fees that Deloitte was charging MIC. Deloitte's fees were \$450,000 for the model build and then recurring fees of some hundreds of thousands of dollars per year per line of business thereafter. ISC's standard fee was a flat \$250,000. However, upon examination and evaluation of the ISC option, MIC decided to continue working with Deloitte. MIC felt that the difference in fees – ISC's \$250,000 for a line of business as applied to the millions of dollars Deloitte has received from MIC – was not worth the difference in the actual work product that ISC would deliver relative to the Deloitte commercialization of the claimed methods.

34. ISC takes a confidential and proprietary approach to building models. It does not appear that they use either the methods of Apte, DeTore, or of the claimed method. ISC has not had success in the marketplace. Their approach is a black box one. Upon information and belief it does not appear to produce meaningful results. Two current Deloitte clients –one a top-30 commercial line insurer, and the other a top-75 commercial lines insurer – both completed a full evaluation with ISC, terminated the project upon receipt of the results, and then engaged Deloitte to do a complete project based on the claimed invention.

**Example II – Prominent Specialty Lines Insurer**

35. This story started about four years ago. It concerns one of the top five insurers nationally in specialty lines premium (the insurance company in question will be termed “SLI” herein for convenience). Deloitte began discussing the impact and the benefits of predictive models for SLI’s specialty business which included employment practices, liability, directors and officers, and other specialty products. Similar to other commercial lines, specialty lines has a fairly subjective underwriting process. Deloitte demonstrated that there was a much more objective way using Deloitte’s predictive modelling methodology to help SLI underwrite and price risks.

36. Multiple members of the SLI executive team were skeptical that the models could be predictive, but SLI felt that there was a competitive advantage and that the benefits would be significant if the models proved to be predictive. SLI decided to fund what they called an incubator project for approximately \$600,000 to see if predictive models could be built and how predictive they would be for various parts of their business.

37. The incubator project was completed within nine months. The results exceeded SLI’s expectations. There was a blind validation sample which proved that there were a large percentage of their policies that were being significantly under priced. Also SLI was losing money on and a large percentage of policies that were being significantly overpriced. There was an opportunity to retain the over priced policies to the extent the competitor tried to undercut their rates. Based on the results of the predictive modelling effort and the blind validation sample, the organization went from a number of skeptics to almost universal support of and belief in the process.

38. Deloitte was commissioned to work with SLI to build a business case around the benefits of using predictive models in their business. The projected benefits to SLI were greater than

several tens of millions of dollars over the course of five years. This resulted in SLI receiving a significant chunk of corporate funding. Deloitte is now in the process of discussing with SLI the options of building and implementing models for most of their lines of business in the specialty products area.

39. This is an example of an organization that was relatively sceptical at first, funded an incubator project, went from being sceptical to being supportive, creating a business case that justified corporate funding for the initiative and is now progressing forward with full scale development of predictive models. It is directly attributable to Deloitte's predictive modelling techniques and technology.

40. The examples of MIC and SLI described above are mere illustrative. Deloitte has had similar experiences with numerous clients since it began offering commercial versions of the claimed invention to the insurance industry. This has resulted in the tremendous commercial successes of Deloitte's AQS practice described above, and has driven its 90% market penetration amongst commercial insurance products that are scored.

41. I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further, that the statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dated: **March 6, 2008**



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Frank M. Zizzamia